

IN THE SPECIFICATION:

The paragraph beginning in the Substitute Specification at page 3, line 5 has been amended as follows:

In embodiments of the pacemaker according to the invention the pacing rate limiter is adapted to limit the pacing rate such that the inequality

$$(t_{\text{diast,rest}}/t_{\text{diast}}) \cdot (SV/SV_{\text{rest}}) < CR \quad (1)$$

is satisfied, alternatively the upper limit determining unit is adapted to determine actual coronary resistance ratio (CRR) from the equation

$$\text{supplied energy} = \text{consumed energy} \quad (2)$$

and determine an upper pacing rate limit from the relation between actual coronary resistance ratio (CRR) and coronary reserve (CR), or the upper limit determining means is adapted to determine the upper pacing rate limit value from the equation

upper pacing rate limit =

$$(60 \cdot CR) / [t_{\text{diast,rest}} \cdot (SV/SV_{\text{rest}} + CR \cdot t_{\text{syst}})] \quad (3)$$

$$(60 \cdot CR) / [t_{\text{diast,rest}} \cdot (SV/SV_{\text{rest}}) + CR \cdot t_{\text{syst}}] \quad (3)$$

where $t_{\text{diast,rest}}$ denotes diastolic duration for the patient in rest conditions, t_{diast} actual diastolic duration for the patient, SV and SV_{rest} actual stroke volume and stroke volume for the patient in rest conditions respectively, and t_{syst} the actual systolic duration. The term "rest condition" is intended to cover not only resting by lying down but also other standard defined low load conditions such as sitting. A bioimpedance measurement unit is preferably provided to measure the intracardiac bioimpedance as a function of time and to determine therefrom the actual stroke volume SV and the actual diastolic and systolic duration t_{diast} and t_{syst} respectively.

Since the electrical bioimpedance can be effectively used to determine cardiac parameters, in particular the parameters mentioned above can be obtained from the time variation of the bioimpedance measured between the tip of an intracardiac electrode and the housing of a pacemaker when an excitation current proceeds from the electrode tip, the parameters needed for preventing the pacing rate from becoming too high can be obtained in a very convenient manner by using a standard pacing lead.